

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 63558D	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2005/008917	International filing date (day/month/year) 17/03/2005	(Earliest) Priority Date (day/month/year) 17/03/2004
Applicant DOW GLOBAL TECHNOLOGIES INC.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 10 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☒ Unity of invention is lacking (see Box III).

4. With regard to the **title,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings,**

- a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9

The subject matter of claims 1-9 relates to a composition comprising two different polymerization catalysts and a chain transfer agent for polymerizing one or more monomers.

2. claims: 10 part 17-27

olefin interpolymer characterized by parameters

3. claims: 11, part 17-27

olefin interpolymer characterized by parameters

4. claims: 12, part 17-27

olefin interpolymer characterized by parameters

5. claims: 13, part 17-27

olefin interpolymer characterized by parameters

6. claims: 14, part 17-27

olefin interpolymer characterized by parameters

7. claims: 15, part 17-27

olefin interpolymer characterized by parameters

8. claims: 16, part 17-27

olefin interpolymer characterized by parameters

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A. CLASSIFICATION OF SUBJECT MATTER

C08F297/08 C08F4/646 C08F2/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, COMPENDEX, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>✓ WO 03/022890 A (EXXONMOBIL CHEMICAL PATENTS INC; MINK, ROBERT, I; NOWLIN, THOMAS, E; S) 20 March 2003 (2003-03-20) paragraph '0014! paragraph '0021! claims</p> <p>----- -/-</p>	1-5,8

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

Special categories of cited documents

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document relating to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *Z* document member of the same patent family

Date of the actual completion of the international search

22 November 2005

Date of mailing of the international search report

20.12.2005

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	LIEBER SUSANNA ET AL: "Propene polymerization with catalyst mixtures containing different ansa-zirconocenes: chain transfer to alkylaluminum cocatalysts and formation of stereoblock polymers" MACROMOLECULES; MACROMOLECULES DEC 2000 ACS, WASHINGTON, DC, USA, vol. 33, no. 25, December 2000 (2000-12), pages 9192-9199, XP002332920 cited in the application the whole document	1-3,8
X	PRZYBYLA, FINK: "Two different on the same silica supported metallocene catalysts, activated by various trialkylaluminums" ACTA POLYMERICA, vol. 50, 21 April 1999 (1999-04-21), pages 77-83, XP002332921 WEINHEIM cited in the application the whole document	1-5,8
X	CHIEN JAMES C W ET AL: "Homogeneous binary zirconocenium catalysts for propylene polymerization. II. Mixtures of isospecific and syndiospecific zirconocene systems" J POLYM SCI PART A; JOURNAL OF POLYMER SCIENCE, PART A: POLYMER CHEMISTRY 1999 JOHN WILEY & SONS INC, NEW YORK, NY, USA, vol. 37, no. 14, 1999, pages 2439-2445, XP002332922 cited in the application the whole document	1-3
A	✓ EP 1 197 500 A (MITSUI CHEMICALS, INC) 17 April 2002 (2002-04-17) paragraph '0044! paragraph '0273! examples 40-62 claims 17-44	1-7
X	✓ US 2002/107341 A1 (MURRAY REX E ET AL) 8 August 2002 (2002-08-08) claim 12	1-3
X	✓ US 2002/161141 A1 (MAWSON SIMON ET AL) 31 October 2002 (2002-10-31) figure 3	1-3,5-7
X	✓ US 2004/044154 A1 (KUO CHI-I ET AL) 4 March 2004 (2004-03-04) examples	1-3

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of the relevant passages	Relevant to claim No
X	<p>✓ US 2003/153689 A1 (MEHTA ASPY KEKI ET AL) 14 August 2003 (2003-08-14) paragraphs '0164! - '0166! -----</p>	1-4
X	<p>TANEM B S ET AL: "Blends of single-site linear and branched polyethylene. I. Thermal characterisation" POLYMER, ELSEVIER SCIENCE PUBLISHERS B.V, GB, vol. 42, no. 12, June 2001 (2001-06), pages 5389-5399, XP004231005 ISSN: 0032-3861 Table 1 : LLDPE(1) -----</p>	10
X	<p>STARCK P ET AL: "Thermal properties of ethylene/long chain alpha-olefin copolymers produced by metallocenes" January 2002 (2002-01), EUROPEAN POLYMER JOURNAL, PERGAMON PRESS, LONDON, GB, PAGE(S) 97-107 , XP004308064 ISSN: 0014-3057 table 1 OCT1: polymers with comonomers: tetradecene, octadecene -----</p>	10,17
X	<p>YOON J-S ET AL: "Thermal and mechanical properties of ethylene/alpha-olefin copolymers produced over (2-MeInd)2ZrCl2/MAO system" June 2000 (2000-06), POLYMER, ELSEVIER SCIENCE PUBLISHERS B.V, GB, PAGE(S) 4523-4530 , XP004189973 ISSN: 0032-3861 Table 1, Code ZH924 -----</p>	10,17
T	<p>BRUASETH I ET AL: "Crystallization analysis fractionation of ethene/1-hexene copolymers made with the MAO-activated dual-site (1,2,4-Me3Cp)2ZrCl2 and (Me5Cp)2ZrCl2 system" October 2004 (2004-10), POLYMER, ELSEVIER SCIENCE PUBLISHERS B.V, GB, PAGE(S) 7853-7861 , XP004606832 ISSN: 0032-3861 -----</p>	11
X	<p>✓ US 6 323 284 B1 (PEACOCK ANDREW J) 27 November 2001 (2001-11-27) table 3 -----</p>	11
A	<p>✓ US 2003/088037 A1 (STEVENS JAMES C ET AL) 8 May 2003 (2003-05-08) Table 3, example 10-13; LLDPE 682I; LLDPE 170; -----</p>	11,13

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of the relevant passages	Relevant to claim No
P,X ✓	WO 2004/046214 A (EXXONMOBIL CHEMICAL PATENTS INC; JIANG, PEIJUN; DEKMEZIAN, ARMENAG; CA) 3 June 2004 (2004-06-03) paragraph '0294! paragraph '0335! -----	11
X ✓	US 2003/195308 A1 (WAYMOUTH ROBERT M ET AL) 16 October 2003 (2003-10-16) Table 10; Catalyst S 85 -----	12
X ✓	US 6 380 341 B1 (WAYMOUTH ROBERT M ET AL) 30 April 2002 (2002-04-30) Table 3 engage 8200 -----	12
P,A	SARZOTTI D M ET AL: "Analysis of the chemical composition distribution of ethylene/alpha-olefin copolymers by solution differential scanning calorimetry: an alternative technique to Crystaf" June 2004 (2004-06), POLYMER, ELSEVIER SCIENCE PUBLISHERS B.V, GB, PAGE(S) 4787-4799 , XP004515407 ISSN: 0032-3861 the whole document -----	13
A	GRAEF S M ET AL: "Copolymerization of propylene with higher alpha -olefins in the presence of the syndiospecific catalyst i-Pr(Cp) (9-Flu)ZrCl2/MAO" 1 January 2002 (2002-01-01), J POLYM SCI PART A; JOURNAL OF POLYMER SCIENCE, PART A: POLYMER CHEMISTRY JAN 1 2002, VOL. 40, NR. 1, PAGE(S) 128 - 140 , XP002355391 -----	13
X	page 138; table III -----	11
X	ROSTHAUSER J W ET AL: "MECHANICAL AND DYNAMIC MECHANICAL PROPERTIES OF POLYURETHANE AND POLYURETHANE/POLYUREA ELASTOMERS BASED ON 4,4 - DIISOCYANATODICYCLOHEXYL METHANE" 2 May 1997 (1997-05-02), JOURNAL OF APPLIED POLYMER SCIENCE, JOHN WILEY AND SONS INC. NEW YORK, US, PAGE(S) 957-970 , XP000802668 ISSN: 0021-8995 page 958; Experimental page 960; Analysis page 961; Table 3, last entry page 966; Figure 6; -----	14
X	BUSAK SHAM: "Zurcon Z20 /Z22" 10 August 2002 (2002-08-10), BUSAK SHAMM BAN , CRISSIER , XP002355392 the whole document -----	14

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	<p>WO 98/49211 A (THE DOW CHEMICAL COMPANY; KALE, LAWRENCE, T; VANDERLENDE, DANIEL, D; N) 5 November 1998 (1998-11-05) figure 14; example 2a -----</p>	16

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Information on patent family members

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✓ US 2002161141 A1	31-10-2002	AU 1790702 A BR 0116461 A CA 2430197 A1 CN 1484655 A CZ 20031553 A3 EG 22949 A EP 1349881 A2 JP 3678726 B2 JP 2004521158 T MX PA03004961 A NO 20032512 A PL 363217 A1 SK 6682003 A3 TW 538052 B WO 0246246 A2	18-06-2002 23-09-2003 13-06-2002 24-03-2004 12-11-2003 13-01-2002 08-10-2003 03-08-2005 15-07-2004 02-04-2004 29-07-2003 15-11-2004 03-02-2004 21-06-2003 13-06-2002
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✓ WO 2004046214	A	03-06-2004	AU 2003302033 A1 CA 2499951 A1 EP 1558655 A2 WO 2005108442 A1	15-06-2004 03-06-2004 03-08-2005 17-11-2005
✓ US 2003195308	A1	16-10-2003	NONE	
✓ US 6380341	B1	30-04-2002	NONE	
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